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REMARKS

Claims 1 to 11, 14 to 16, and 22 to 28 are pending after this amendment. Claims 17 to 21 are cancelled by this amendment. Claims 14, 15, 16/14, 22 and 23/16/14 are allowed.

The Applicant notes that the most recent Office Action fails to consider claims 9 to 11. These claims were previously amended to depend from claim 6, so that they are included in Group I, as identified by the Examiner in the Office action dated 31 October 2002.

The Applicant has amended claims 1 and 5 to recite that the plunger is prevented from entering a snap-down condition as it moves over an actuation range which includes at least a portion of a snap-down range of the actuator. The Applicant has amended claims 2 to 4 to depend from claim 1. The Applicant has cancelled claims 17 to 21, which recited that the actuation range includes at least a portion of a snap-down range of the actuator.

The Applicant has added new claims 27 and 28. The Applicant submits that these claims add no new subject matter, as the subject matter of these claims is described at page 15, line 1 to page 17, line 9, and in originally filed claim 14.

Claim rejections under 35 U.S.C. §§102 and 103

Claims 1 to 5, 7, 8, 16/1-5, 16/7-8, 17 to 20, 23/16/1-5, 23/16/7-8, and 24 to 26 currently stand rejected under 35 U.S.C. §102(b). Strain (US 5,729,075) and/or Snelling (US 4,835,461) have been cited against these claims.

Claims 6, 9 to 11, 16/6, 16/9-11, 21, 23/16/6 and 23/16/9-11 currently stand rejected under 35 U.S.C. §103(a). Snelling (US 4,835,461) and deBoer et al. (US 6,446,486) have been cited against these claims.

The Applicant submits that the amended claims presented herewith patentably distinguish Strain, Snelling and deBoer et al.

Strain, as understood, discloses an oscillator formed by a cantilever (12) which is subjected to a vibratory force imposed on it by an electrode (18). The vibratory force, in conjunction with the cantilever's mechanical characteristics, causes the cantilever to vibrate about its rest

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position. The orientation of the cantilever (12) and the electrode (18) precludes any possibility of snap-down of the cantilever occurring.

Snelling, as understood, discloses an electrostatic voltmeter comprising a flexible finger with a sensing electrode (29) and a base with a reference electrode (21). The sensing electrode (29) has a probe surface (33) that is used to detect charges on a surface (35). Charge on the surface (35) induces a charge in sensing electrode (29) in an area opposite the reference electrode (21), and causes the sensing electrode (29) to deflect from its rest position. The voltmeter of Snelling may be used to detect if a threshold voltage is present on the surface (Figure 1), or may be used to measure the voltage of the surface (Figure 2). In the embodiment shown in Figures 3 and 4, the sensing electrode (29) has a second electrode (61) which is vibrated to allow the voltmeter to function independently of the spacing from the surface (35) (see column 4, lines 53-63). The purpose of Snelling's device is to measure the voltage of a surface (35), not to control the position of an actuator. Furthermore, there is nothing in Snelling to suggest that either the sensing electrode (29) or the secondary electrode (61) ever comes near to a snap-down region wherein the sensing or secondary electrode has a risk of becoming stuck to the reference electrode (21).

DeBoer et al., as understood, discloses a friction test apparatus, and is only relevant to the claims of this application in as much as deBoer et al. teaches the use of a computer for controlling a microelectromechanical device.

Claims 1 and 5 have been amended to recite methods for "controlling a position of a plunger of an actuator" within ranges including "at least a portion of a snap-down region of said actuator." Further, each of these independent claims recite that "said plunger is prevented from entering a snap-down condition." New independent claim 27 also recites these features. These features are not disclosed or even suggested by any of Strain, Snelling, or deBoer et al.

As noted above, the arrangement of Strain does provide a snap-down region within which the cantilever (12) can move, and deBoer et al. is not relevant to this aspect of the invention.

Snelling teaches away from the features of independent claims 1, 5 and 27. As described at column 4, lines 31-36, the reference voltage of Snelling is adjusted by amplifier (49) in response to a measured voltage such that the sensing electrode (29) returns to the null (i.e. rest) position. The arrangement shown in Figure 4 produces similar effects, as described at

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column 5, lines 35 to 49, with the sensing electrode (29) oscillating about the null position. There is no possibility that the sensing electrode (29) could move into a snap-down region of Snelling's device, since the reference voltage is adjusted in response to the voltage measured by the sensing electrode (29).

Accordingly, since the features of independent claims 1, 5 and 27 are not disclosed or even suggested by any of Strain, Snelling, or deBoer et al., it is submitted that these claims are now in condition for allowance. It follows that claims 2 to 4, 6 to 11, 16/1-5, 16/7-8, 23/16/1-11, 24 to 26 and 28, which depend therefrom are also patentable over Strain, Snelling, and deBoer et al.

The Applicant respectfully requests reconsideration of this application in light of the foregoing amendments and remarks. The Applicant looks forward to receiving further favorable action on this application.

Respectfully submitted,

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APR 24 2003

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